

Attorney Docket No. 2003B085

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SUPPORT FOR THE AMENDMENTS

Claim 24 has been amended to in view of the §112 rejection in the parent case so that it is consistent with the invention as described in paragraphs [0017] and [0024]. As clearly set forth in the specification, the feedstream is successively hydrogenated and oligomerization ("in series" as described in paragraph [0024]).

Claims 25-28 have been amended to remove "preferably" language.

New Claims 33-36 are directed to the preferred embodiments previously set forth in Claims 25-28, respectively.

It is believed there is no possibility of new matter.

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Claims 24-28 and 30-36 are in the case.

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Applicants first would like to thank Examiner Dang for the courtesies extended to their representative, Dr. Xiaobing Feng, on September 21, 2006. During the discussion, Claim 24, set forth above, was presented, along with Table 1, below.

While no agreement was reached during the discussion, Examiner Dang expressed the opinion that the amendments presented might overcome the rejection under §112, however the Examiner reserved the right to consider the matter in more detail after a response was submitted.

The following discussion is intended to summarize as well as elaborate on the discussion of September 21, 2006.

The previous Claims 24-32 were rejected under 35 USC 112, second paragraph, for the reasons set forth in the Official Action. It is respectfully submitted that the amendments above overcome this rejection. In particular, as pointed out in the Support for the Amendments section above, it is respectfully urged that the specification clearly supports the idea that the feedstream undergoes successive steps of selective hydrogenation and selective oligomerization in order to achieve the desired separation, so that the entire product of the selective hydrogenation step is then subjected to selective oligomerization. It is respectfully urged that the claim now particularly points out and distinctly claims the subject matter which Applicant regards as the invention.

It is respectfully requested that the rejection under 35 USC §112 be withdrawn.

Previous Claims 24-25 and 27-29 are rejected under 35 USC §102 were rejected under 35 USC §103, over Marchionna et al. (U.S. 2004/0010171).

Marchionna et al. is directed to producing hydrocarbons with a high octane number from mixtures "essentially consisting of n-butane and isobutane". The present invention is directed to separation of linear butenes from mixtures of olefins. The process

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described by Marchionna et al. is compared with the process of the present invention in the chart below:

Table I

US 2004/0010171	Present invention
(a): feeding n-butane and isobutane and H ₂ to a skeletal isomerization section	(i): feeding isobutene/butadiene/linear butenes
(b): result of (a) + mixture of n-butane and isobutane to dehydrogenation section	
(c): result of (b) to selective hydrogenation of butadiene	(i'): isobutene/butadiene/linear butenes to selective hydrogenation of butadiene
(d): result of (c) to conversion section where isobutene dimerized/etherified	(ii): result of (i) to conversion section where isobutene oligomerized
(d'): separated dimerized butene hydrogenated → iso-octane stream	(ii'): isobutene oligomers separated
(d''): → C4 stream of isobutane, n-butane and linear butenes	(ii''): → recover linear butenes
(e): linear butenes alkylated to yield C4 stream comprising saturated hydrocarbons	
(f): C4 stream separated	
(f'): → overhead comprising propane and isobutane	
(f''): → and bottoms comprising n-butane which is recycled to (a)	
(g): product of (f) separated into light overheads and isobutane bottoms	

As illustrated above, at least two essential differences between the reference and the present invention are apparent: (1) nature of the feedstream, and (2) nature of what is separated and recovered.

(1) Regarding the nature of the feedstream, Marchionna et al. is concerned with the problem of separation of feedstreams such as "field butanes", which are paraffins, whereas the present invention is concerned with the problem of separation of olefins. These are not related problems. Not surprisingly, the initial feedstreams are completely different.

(2) Regarding the separation and recovery of the final products, Marchionna et al never isolates linear butenes, which is an essential feature of the present invention. In order to achieve the desired separation in Marchionna et al., the linear butenes, contained in a mixture with other species, must be alkylated.

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Accordingly, the reference cannot anticipate nor fairly suggest the present invention.

Claims 26 and 30 are rejected under 35 USC §103 over Marchionna et al. in view of Polanek et al. The Polanek et al. reference is directed to a catalyst and the conditions for selective hydrogenation of butadiene and cannot cure the deficiencies of Marchionna et al.

Accordingly, the combination of references cannot anticipate nor fairly suggest the present invention

Claims 31-32 are rejected under §103 over Marchionna et al. in view of Sakurada et al. The Sakurada et al. reference is directed to the oligomerization of isobutene and cannot cure the deficiencies of Marchionna et al., set forth above.

Thus, because of the reasons set forth above, in conjunction with the amendments, it is respectfully requested that the rejections under 35 USC §103 be withdrawn. There being no further issues, Applicants respectfully urge that the present application is in condition for allowance and early indication of such is earnestly solicited.

Respectfully submitted,

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Date

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